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that ideas and conceptions, elaborated according to the prescriptions of logic, aesthetics, ethics, and religion, result in action, which in turn reacts on and modifies the initial ideas and conceptions. This view of education is confessedly biological in its origin. The child is regarded as an organism reacting to stimulation. This way of regarding education is not at all new to American readers. Perhaps we should be grateful to Lay for the emphasis laid by him upon what he calls elaboration, the process intermediate between impression and expression. His *Experimentelle Didaktik* had treated in a very satisfactory way the importance of the motor sensations and the dynamic factors in education. In the *Experimentelle Paedagogik* there seems to be a degree of irrelevance in the author's exposition of his educational theory. It seems a little forced to devote over half the space to *impression*, *elaboration*, and *expression*, and to record heterogeneous child-study investigations under each of these headings. Why, for example, is Schmidt's study of the homework of school children mentioned in that section of the book dealing with elaboration, or why is the research of Lobsien and others in reference to memorization, or the investigation of Schuyten in reference to the learning of foreign languages recorded in the section dealing with expression?

Lay, in conclusion, glancing over the many fields that have already been treated by experimental pedagogy, expresses the hope that all departments of instruction and education may be brought under the research methods of comprehensive observation, statistical treatment, and experiment, and that pedagogy may be recognized as being, like medicine, an art resting on a scientific basis. He urges the founding of pedagogical laboratories under state, municipal, university, and normal-school control.

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The Economy and Training of Memory. By HENRY J. WATT. New York: Longmans, Green & Co., 1909. Pp. 128. 1s.6d.

This little book gives briefly and in non-technical language the results of the experimental work on memory and imagery. In connection with each topic the author attempts the difficult task of framing rules as to the best methods of memorizing and learning in practical life. While his adjustment of theory to practice is on the whole sane and helpful, there is no attempt to connect with the *special* problems of the school. The author believes in the existence of imageless thought, and his desire to differentiate it from imagery processes renders the treatment of logical memorizing unsatisfactory. To pass to the positive contributions of the book, the following illustrations will give some idea of its character. From the fact that an interference in recall occurs where two things have been associated with a third, the conclusion is drawn that a child who hesitates should not be allowed to give a wrong answer. The teacher should let another child give the correct answer or himself give it. The influence of the will is very effectively brought out. The experimenter who reads his material aloud to his subjects is much slower in learning it than they, because he does not will to learn it. Eighty repetitions of an irrelevant association will hardly suffice to overthrow the intention of a trained mind to answer

correctly. The familiar idea that learning a thing through several senses is better than learning it through one, which goes back at least as far as Pestalozzi and is vouched for by no less an authority than James, is given up. Energy should be concentrated on one method so that it becomes reliable. The individual differences in types of imagery, however, necessitate the teacher's presenting the subject-matter in a number of different ways, so that the above direction applies to the learner rather than to the teacher. In his advice to learn thoroughly before trying to recall, the author would do well to consider the results of Witasek in his investigation, "Ueber Lesen und Rezitieren," in the *Zeitschrift für Psychologie*, Band 44. The book is thoroughly scholarly. It should find most immediate use as a text in college courses in educational psychology, and in some normal schools.

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Beginner's Botany. By LIBERTY H. BAILEY. New York: Macmillan, 1909. Pp. x+208. Illustrated. \$0.60 net.

Professor Bailey is one of the most prolific writers of the day on botanical and horticultural topics. His books have always been welcomed by the general public as well as by scientists and teachers, and it seems certain that his latest work on elementary botany will find acceptance with both these classes. The instructors will approve of its beginning with plants as they grow together, and of its having among its first chapters such topics as "The Struggle to Live," "Survival of the Fit," and "Plant Societies." A further appeal to those who teach is made in the very suggestive exercises and questions at the close of each chapter.

The general public will be interested in the connection that is made between botany and industrial life as represented by gardening and farming, for not only is the economic aspect of the science given adequate attention but the illustrative material is taken largely from the garden and orchard.

To those familiar with the author's previous works upon this subject it will be sufficient to say that the present volume is a simplified edition of his larger botany, rearranged and altered in accordance with the advance of science. Others may be interested to know that the book contains material for a half-year high-school course upon the seed plants, together with a couple of chapters dealing with some of the lower forms of plant life. Like all of Professor Bailey's books, it is charmingly written and pleasingly illustrated. Most of the cuts are small but very appropriate and helpful. By its simplicity of treatment it is particularly well fitted for use in the grammar grades and in the first year of the high school. The nature-study teacher in the grades should have a copy, for in it she will find suggested many lessons suitable for her classes.

If one were to presume to criticize the contents, one might desire that less space should be devoted to the definition of descriptive structural terms, and more given to the consideration of such structural features as are definitely related to the activities of the organism. One might also regret that "endogenous" stems had not been relegated to some scientific rubbish heap, or be surprised to